Seat No.: _____ Enrolment No.

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–VII (NEW) EXAMINATION – WINTER 2017

Subject Code: 2170701 **Date:02/11/2017**

Subject Name: Complier Design

Time: 10:30 AM TO 01:00 PM **Total Marks: 70**

Instructions:

1. **Attempt all questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**

			MARKS
Q.1	**(a)**	What is the difference between compiler and interpreter?	**03**
	(b)	Explain analysis phase of the source program with example.	**04**
	(c)	Write an algorithm for Thompson's construction method. Apply the algorithm to construct NFA for following regular expression. (a | b)*abb.	**07**
Q.2	**(a)**	What is a pass in a compiler? What is the effect of reducing the number of passes?	**03**
	(b)	Explain error recovery strategies used by parser.	**04**
	(c)	What is operator grammar? Generate precedence function table for following grammar. E -> EAE | id A -> + | *	**07**
		OR	
	(c)	Define handle and handle pruning. Explain the stack implementation of shift reduce parser with the help of example.	**07**
Q.3	**(a)**	Give the translation scheme that converts infix to postfix notation. Generate the annotated parse tree for input string 3-5+4.	**03**
	(b)	Explain buffer pairs and sentinels.	**04**
	(c)	Check given grammar is LL(1) but not SLR(1). S -> AaAb | BbBa A -> € B -> €	**07**
		OR	
Q.3	**(a)**	Write a rule of Left factoring a grammar and give example.	**03**
	(b)	Explain role of lexical analyzer.	**04**
	(c)	Define syntax tree. What is s-attributed definition? Explain construction of syntax tree for the expression a-4+c using SDD.	**07**
Q.4	**(a)**	Translate the arithmetic expression a*-(b+c) into 1. Syntax tree 2. Postfix notation 3. Three address code	**03**
	(b)	Write Syntax Directed Definition to produce three address code for the expression containing the operators := , + , - (unary minus), ( ) and id.	**04**
	(c)	What is activation record? Explain stack allocation of activation records using example.	**07**
		OR	
Q.4	**(a)**	What is activation tree?	**03**
	(b)	Explain parameter passing techniques for procedure.	**04**
	(c)	What is importance of intermediate code? Discuss various representations of three address code using the given expression. a = b * -c + b * -c .	**07**

Q.5	**(a)**	Explain three loop optimization techniques with example.	**03**
	(b)	What is code optimization? Explain data flow equation.	**04**
	(c)	Describe code generator design issues.	**07**

OR

Q.5	**(a)**	Define following : DAG, Basic Blocks, Flow graph	**03**
	(b)	Explain peephole optimization.	**04**
	(c)	Explain function preserving transformations with example.	**07**

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